

## *Biology and Management of Soilborne Diseases on Horticultural Crops*

### **ARS LOCATION:**

Horticultural Crops Research Unit  
3420 NW Orchard Ave.  
Corvallis, OR 97330

### **PRINCIPAL INVESTIGATOR:**

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### **PROJECT OBJECTIVES:**

1. Determine the impact of plant-parasitic nematodes found in the Pacific Northwest on grape production.
2. Develop management practices to minimize the impact of plant-parasitic nematodes on grape.

### **MAJOR ACCOMPLISHMENTS (2007-2010):**

#### Ring Nematodes Overcome Resistance in Grapevine Rootstocks:

The ring nematode is a common vineyard pest worldwide, where it can reduce vine establishment and crop yields. The most cost-effective means to maintain vine productivity in nematode-infested soils is to plant vines on nematode-resistant rootstocks. ARS scientists at Corvallis, OR, showed that ring nematodes eventually reached high populations on root systems of vines grafted onto two rootstocks (101-14, 110R) that were previously found to be resistant in greenhouse trials. Of six rootstocks tested, only 420A remained highly resistant to ring nematode after 4 years in field microplots. These findings are particularly important for viticulturists in the Pacific Northwest, since 101-14 is a common rootstock used in the region.

#### Susceptibility of own-rooted Chardonnay and Cabernet Sauvignon to northern root-knot nematode:

The northern root-knot nematode (*Meloidogyne hapla*) was detected at moderate to high population densities in 75 percent of eastern Washington vineyards surveyed. The impact of this nematode on vine establishment and productivity is unknown. Two years after inoculation of own-rooted Chardonnay and Cabernet Sauvignon with the northern root-knot nematode, ARS and Washington State University scientists showed that Chardonnay was a better host for this nematode; populations of root-knot nematode were 100x higher on Chardonnay compared to Cabernet Sauvignon. There was no difference in pruning weights between nematode-inoculated and control vines. However, there was a trend for lower pruning weight of Chardonnay vines that were infected with the nematode compared to the control. These findings are important to Washington grape growers and may direct planting material selection in replant sites that have high northern root-knot nematode populations.

### **TECHNOLOGY TRANSFER/OUTREACH:**

Scouting School Instructor, Oregon State University Extension Field Day

### **EXTERNAL SUPPORT:**

Northwest Center for Small Fruit Research

**COLLABORATORS:**

Paul Schreiner, ARS Corvallis, OR; Ekaterina Riga, formerly Washington State University, Prosser, WA; and Jack Pinkerton, ARS retired, Corvallis, OR.

**RECENT PUBLICATIONS:**

None